NIOSH RECOMMENDATIONS
For
REVISION OF HAZARDOUS ORDERS

Agricultural Hazardous Order No. 7
Driving a Bus, Truck, or Automobile When Transporting
Passengers, or Riding on a Tractor as a Passenger or Helper

Cost Benefit Analysis
By
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For
Wage AND Hour Division
ESA/DOL

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1.   INTRODUCTION

The National Institute for Occupational Safety and Health (NIOSH) report on recommended changes to child labor Hazardous Orders (HOs) proposes revising the current HO regarding minors operating motor vehicles within the agriculture industry. [NIOSH, 2002] Specifically, the NIOSH recommendation includes the following:

No.	Recommendation	Rationale
1	Expand the HO to prohibit driving of all types of motor vehicles and off-road vehicles, including all-terrain vehicles (ATVs), with or without passengers, and on or off the highway.	The current HO is limited to buses, trucks, and automobiles and does not reflect the breadth of vehicles used in agricultural production currently. Fatality and injury data support prohibition of driving all types of motorized vehicles. Also, most states do not allow youths under age 16 to exercise full driving privileges, yet the current HO does not explicitly prohibit driving by agricultural workers under the age of 16. Finally, operating a motor vehicle without passengers does not reduce the crash risk to acceptable levels.
2	Expand the HO to prohibit work as an outside helper on a motor vehicle.	Available data indicates that there are fatalities and injuries among agricultural workers under the age of 16 associated with working as an outside helper on a vehicle. Revising this HO to include prohibition of this activity would offer increased protection to young workers and make this HO consistent with non-agricultural HO 2.
3	Retain the provision prohibiting riding on a tractor as a passenger or helper, but move it under agricultural HO 1.	Fatalities and injuries associated with riding on a tractor as a passenger have been reported among agricultural workers under age 16. Retention of this provision is warranted, but it should be placed under HO 1 so that all tractor-related hazards are addressed in a single HO.

Because the third recommendation concerning riding on tractors as passengers does not eliminate the exclusion but rather realigns it with a more appropriate HO, there would be no impact, either as a cost or a benefit, on either of the HOs in general.

The objective of the cost benefit analysis, therefore, is to more thoroughly analyze the NIOSH recommendation to update the current HO regarding youths operating motor vehicles within the agricultural industry, including the rationale behind the recommendation, to estimate likely costs and benefits associated with implementation, and to evaluate the impact of implementation among the various stakeholders. Finally, this analysis is intended to be a non-budgetary tool and is based on certain assumptions and predictions of costs over time. As a result, dollar estimates are subject to change given changes in both the underlying assumptions and costs and benefit estimates.

2. ASSUMPTIONS AND LIMITATIONS

The following are the general assumptions and constraints that were made for the overall analysis.

1. Data regarding the number of youths employed is based on the NIOSH/National Agricultural Statistics Service (NASS) Childhood Agricultural Injury Survey estimate of 84,570 hired youth workers under the age of 16 (excluding family).

2. Industry will fully implement and comply with the HO, if adopted. Fines and other penalties imposed by the WHD will have a net effect (cost to industry/benefit to government) as a result.

3. The count for injuries and illnesses are separate and mutually exclusive, with each based on a separate incident.

4. Implementation of a new HO will have a direct impact on the number of deaths, injuries, and illnesses and will reduce the rate to zero for the age group under consideration.

5. Costs associated with implementation by the industry will be passed along in the form of higher prices to consumers. There will not be an adverse effect on the size of the industry due to adoption of the HO.

6. State adoption of the HO will occur via an expedited rule adoption process and will not include a lengthy analysis and comment period.

7. Multiplier effects to the economy are not included in the analyses. For example, any increase in prices as a result of industry implementation of the HO will be offset by a decrease in workers' compensation premiums via taxes collected by a state to fund the workers' compensation program.

8. The analysis is limited to the impact to the industry as a whole and does not measure the economic impact to any particular region.

9. Any implementation costs associated with translation of the HO into multilingual formats are considered to be sunk costs and not considered. This assumption is based on Executive Order 13166, which established mandatory accessibility to government services for individuals with limited English proficient.

3. METHODOLOGY

The following overall approach was used in conducting the cost benefit analysis for this HO:

A. The literature was reviewed and facts and information collected to study motor vehicle operations within the agricultural industry, employment trends, safety and health issues, and economic factors.

B.   Facts and information were collected and analyzed with regard to fatalities, injuries, and illnesses within the agriculture industry.

C.   Other factors regarding implementation of the HO were examined, including those associated with the feasibility of implementing the HO, the impact to small and family-owned businesses, and the possible cause-and-effect relationships.

D.   Quantitative costs and benefits were developed based on the Office of Management and Budget (OMB) guidelines, and in particular, Circular A-4 guidelines. Methodology specific to the quantitative assessment is described further in Section 9.1.1.

E.   Qualitative costs and benefits (those costs and benefits that are non-quantifiable and/or immeasurable within the scope of this analysis) were determined based on the literature review and information gathering process.

F.   The relevant stakeholders for the analysis were considered to be the individuals (youth workforce), industry, and government (federal and state). The analysis focused on costs and benefits to each of these stakeholders independently.

G.   Sensitivity analyses were conducted on those assumptions and variables considered to be the most uncertain to determine the impact of the changes on the overall quantitative results.

4.   LITERATURE REVIEW

4.1   Review of Injuries, Illnesses, and Fatalities

Following are statistics regarding occupational injuries, illnesses, and fatalities regarding motor vehicle-related injuries and fatalities and form the basis for estimating the costs and benefits of HO implementation:

- Over the six-year period 1992 to 1997, there were a total of 1,541 fatalities among agricultural production workers of all ages as a result of collisions and single-vehicle incidents both on- and off-highway. Tractor-related accidents accounted for 1,008 fatalities, mobile machinery, including forklifts, accounted for 207 fatalities, and animal-drawn vehicles accounted for 12 fatalities. The remaining 314 cases are significant to this HO. [NIOSH; 2002] Between 1997 and 2002, there were a total of 993 fatalities to workers of all ages in the agriculture production—crops sector and 346 fatalities in the agriculture production—livestock sector as a result of highway and non-highway transportation incidents. [CFOI; 2004]

- Of the 314 vehicle-related fatalities, 74.5 percent occurred on the highway, and the decedent was operating the vehicle in 83.8 percent of the on-highway accidents. Off-highway accidents were most often associated with trucks and ATVs, and the decedent was the vehicle operator in 71.3 percent of the off-highway accidents. With regard to truck-related fatalities, 22 of the decedents were riding on the vehicle as an outside helper, usually in the truck bed. [NIOSH; 2002]

- There were a total of 10 vehicle-related youth fatalities in the agriculture industry from 1992 to 1997, excluding fatalities related to tractors, mobile machinery, and animal-drawn vehicles. Six of the fatalities occurred on the highway, while four were off-highway. Trucks accounted for six fatalities, and the decedent was driving the vehicle in the majority of the cases. There were an additional 4 fatalities to youths under the age of 16 as a result of working as an outside helper and/or off-highway driving. [NIOSH; 2002]

- Within the agricultural production-crops industry, a review of the BLS Survey of Occupational Injuries and Illnesses (SOII) data for the period 1996 to 2001 showed a total of 3,432 injuries (5.52 percent of total injuries) as a result of the event "Transportation Accidents" and 6,147 (9.89 percent of total injuries) attributed to the source "Vehicles." Within the agricultural production-livestock industry, 1,006 (3.33 percent) of all injuries were attributed to the event "Transportation Accidents" while 2,163 (7.15 percent) injuries were attributed to the source "Vehicles." [BLS SOII, 2004]

- Of a total of 83 ATV (source code 841) fatalities occurring between 1997 and 2002, 50 occurred on a farm and 59 occurred within the "Agriculture, Forestry, and Fishing" industry. [CFOI; 2004]

- In 1998, there were an estimated 5,444 vehicle-related injuries to youth workers under the age of 16. Nearly half (47.4 percent) of the injuries were a result of ATV accidents. Automobiles accounted for 27.2 percent of all injuries, and trucks accounted for 6.3 percent. The injured youth was the vehicle operator in 73.9 percent of the cases, a passenger (8.7 percent), and riding elsewhere on the vehicle (6.1 percent). [NIOSH; 2002]

- In 1997, there were 161 fatalities reported of occupants riding in the cargo area of pickup trucks. Of these fatalities, 77 (48 percent) were youths under the age of 20; 14 (18 percent) were between the ages of 10 and 14, and 41 (53 percent) were between the ages of 15 and 19. In both crash and non-crash events, ejection represents the most significant hazard for occupants riding in cargo areas, and non-crash events (i.e., sudden stops, turns, swerves, loss of balance) represented approximately 33 percent of fatalities that occurred between 1987 and 1996. However, less than 50 percent of states restrict passengers riding in the cargo areas. [AAP; 2000] In a prior 1994 study conducted using data from the California Statewide Integrated Traffic Records System, the proportion of cargo-related accidents occurring in rural communities (43 percent) was significantly higher than that of cab-only passenger accidents (33 percent). Accidents involving cargo passengers were fatal in 4.6 percent of all cases versus 2.4 percent for cab-only passenger crashes. Finally, non-collision events account for 17 percent of all cargo passenger accidents. [Agran P, Winn D, Anderson C; 1994]

- A query of the NIOSH @Work-RISQS database resulted in an estimate of 0 injuries (1998 and1999) to youth workers under the age of 14 and between the ages of 15

and 17 as a result of highway and non-highway motor vehicle accidents (event codes 41 and 42). [NIOSH @Work-RISQS; 2004]

- A review of the NIOSH Fatality Assessment and Control Evaluation (FACE) program resulted in two fatalities as a result of motor vehicles. One of the fatalities involved a 16-year-old girl who was killed while riding as a passenger on a tractor. The second fatality involved a 50-year-old farmer whose ATV overturned. [NIOSH FACEWeb; 2004]

- A review of Bureau of Labor Statistics (BLS) data regarding agricultural injuries to workers of all ages as a result of various motor vehicle-related events showed an average rate of 96 injuries annually and 10.59 as the median average Days Away From Work (DAFW). Table 1 provides further detail of the sources of injuries; a listing of the event codes is provided in Appendix 1.

TABLE 1

AVERAGE NUMBER OF INJURIES AND DAYS AWAY FROM WORK (DAFW) BY INDUSTRY AND EVENT—ALL AGES

| CATEGORY	AVERAGE INJURIES	AVERAGE DAFW
BY INDUSTRY:		
Agricultural production – crops	265.1	5.8
Agricultural production - livestock	770.7	5.4
Average by Industry:	517.9	5.6
BY EVENT (AGRICULTURE INDUSTRY):		
Highway accident	*872.9*	*9*
Non-Highway accident, except rail, air, water	*617.5*	*9.1*
Collision between vehicles, mobile equipment	63.2	10.9
Non-highway accident, n.e.c.	42.33	9.8
Non-highway accident, unspecified	28.5	13.1
Vehicle, mobile equipment struck stationary object	62	10.9
Non-collision accident, unspecified	12.5	10.9
Fall from moving vehicle, mobile equipment	138.1	10.9
Fall from and stuck by vehicle, mobile equipment	60.5	10.9
Overturned	126.4	13.3
Loss of control	51.5	10.6
Struck by shifting load	12	9.5
Sudden start or stop, n.e.c.	46.5	7.9
Non-collision accident, n.e.c.	110.9	9.4
Non-collision accident	493.6	9.6
Average by Source:	96	10.59

(Source: Bureau of Labor Statistics (BLS), *Nonfatal cases involving days away from work: selected characteristics.* Found at: http://www.bls.gov/iif/home.htm)

- According to the National Children's Center for Rural and Agricultural Health and Safety, the majority of all agricultural-related injuries in youths occur to those who are part of the farm household (15.7 injuries per 1,000 youth). Eighteen percent (18%) of youth's age 14 to 17 working in crop production are children of farmers hired to work for farmers other than their parents. [NCC RAHS; 2003]

- A review of the Occupational Safety and Health Administration (OSHA) accident database revealed 10 accident reports between 1990 and 1999, 7 of which involved fatalities. Four of the accidents involved ATVs, four involved trucks, one involved machinery, and one was not specific. The majority (6) of the accidents occurred off-highway, two occurred on-highway, and the remaining two were not specified. The age range of the employees varied from 20 to 72, although 70 percent of the accidents occurred to employees in the age range 20 to 29. [OSHA, 2004]

- In 1996, the risk rate of being involved in a crash for licensed drivers under the age of 16 is approximately 265 per 1,000 licensed drivers; however, the risk rate drops by approximately 38 percent after the age of 16 (see Figure 1 below). In terms of estimated annual travel, the risk rate for drivers under the age of 16 is approximately 10 times as high as the lowest rate. [Cerrelli EC; 1998]

FIGURE 1

1996 CRASH INVOLVEMENT RATE
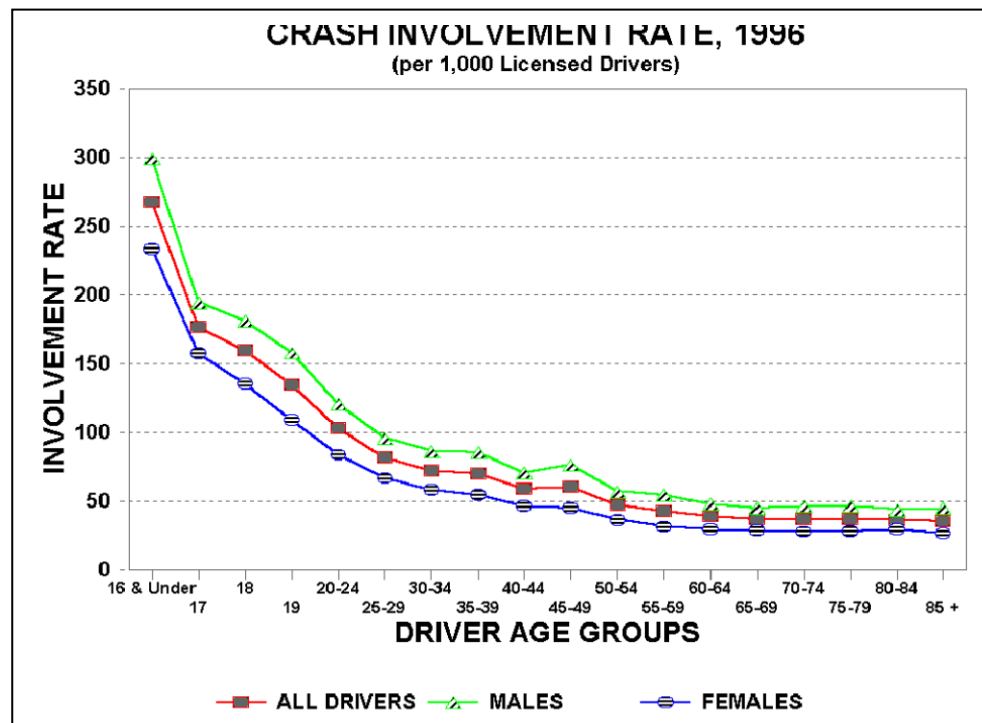
(*Source*: Cerrelli EC. *Crash Data and Rates for Age-Sex Groups of Drivers, 1996.* U.S. Department of Transportation, National Highway Traffic Safety Administration. January 1998.

- Agricultural injuries account for a significant proportion of occupational long-term disabilities among workers of all ages. Significant long-term disability occurred in 41 percent of farm-related injuries in a Minnesota emergency department. In New York State, permanent disability exceeded temporary disability by a ratio of 1.17:1 in the agriculture industry. [Pediatrics, Vol. 118, No. 4, October 2001]

- Based on data collected by the Regional Rural Injury Study-I (RRIS-I), a five state, population-based study conducted in Minnesota, Wisconsin, North Dakota, South Dakota, and Nebraska over two, six-month periods in 1990, 83 percent of 77 farming-related injuries to youths aged 0 to 19 required professional medical care, and 34 percent resulted in restrictions from regular activity for one week or more. [Gerberich SG, Gibson RW, French LR, Renier CM, Lee TY, Cart WP, Schutske J; 2001]

- In 1995, the frequency rate for lost-time injuries as a result of trucks/autos for hired workers less than 20 years of age was 1221.7 while the frequency rate for family workers as a result of trucks/autos was 1612.5. The frequency rate for "other vehicles" was 1231.8 for hired workers less than 20 years of age and was 3425.8 for family workers. [Myers JR; 2001]

- When compared with all other industries, farm workers' insurance claims for youths aged 13 or younger accounted for 50 percent of all severe injury claims. [Kidd P, Townley K, Cole H, McKnight R, Piercy L; 1997]

4.2   Motor Vehicle Usage in the Agricultural Industry

The NIOSH recommendation for revisions in the existing HO regarding operating motor vehicles addresses a number of issues concerning types of motor vehicles covered and the activities of youth agricultural workers. As defined by the American National Standard (ANSI) D16.1-1996—Manual on Classification of Motor Vehicle Traffic Accidents, transport devices include any "device designed primarily for moving persons or property along with the device itself from one place to another." [ANSI; 1996] Included under this definition are transport vehicles, including animal transport vehicles, farm tractors pulling loaded wagons, ad trailers used as part of transport devices; excluded from the ANSI definition are devices not designed primarily for moving persons or property, such as construction and farm machinery. [ANSI; 1996] Based on the NIOSH recommendation, however, both tractor operations and animal-drawn vehicles are not applicable to this particular HO.

All-Terrain Vehicles (ATVs). ATV usage for work purposes in the agricultural production industry is more widespread than in most any other industry today. Sales and usage of ATVs increased significantly in the U.S. in the early 1980s, four-wheeled ATVs were introduced in 1983, and sales of these new models increased by over 350 percent between 1983 and 1984 alone. Along with the increase in sales, however, injury and fatality rates also doubled. The Consumer Protection Safety Commission (CPSC) determined that driver inexperience contributed to an accident risk of 13 times that of more experienced drivers. In addition, design features of ATVS, specifically stability and handling characteristics, were also found to be

significant contributors to accidents. In 1987, the U.S. Department of Justice (DOJ) filed a complaint against ATV manufacturers alleging that mechanical properties in addition to the safe appearance of ATVs resulted in a risk of injury and death to users. A settlement was reached in 1988 in which manufacturers agreed, among other provisions, to stop the sale of three-wheeled ATVs, provide free training for purchasers, and to participate in certain limited safety campaigns, including not to market ATVS with engines of 90 cc and more to children between the ages of 12 and 15. [Ford GT, Mazis MB; 1996] In a public hearing conducted by the CPSC in June of 2003, ATVs accidents accounted for more than 111,000 accidents in 2001, one-third of which occurred to users under the age of 16. The injury rate was 104 percent higher than the ATV injury rate in 1997. It was also estimated that the number of ATV drivers increased by 36 percent, driving hours increased by 50 percent, and the number of ATVs increased by 40 percent. [Injury Prevention; 2003]

Graduated Driver Licensing. Motor vehicle licensing requirements for minor drivers vary by state; however, the majority of states have implemented a graduated driver licensing approach to reduce the risks for these novice drivers. Graduated driver licensing as a legislative action is designed to address four primary principles: 1) minimizing high-risk situations for novice drivers; 2) increasing the amount of low risk, on-highway training; 3) recognizing trade-offs between the novice driver, passengers, and other motorists; and 4) granting full driving privileges only after a supervised driving stage and unsupervised in low risk situations (intermediate) stage have been completed. [Branche C, Williams AF, Feldman D; 2002] As of June 2002, 46 states had in place at least one of the key graduated driver licensing principles, 35 states had adopted both the supervised (learner) and intermediate stage principles, and 18 states restricted the number of passengers permitted to be in the vehicle with a licensed teenage driver. [Branche C, Williams AF, Feldman D; 2002] Restricting the number of teenage passengers allowed to be transported by a minor with an intermediate driver's license is also estimated to be a source for fatality reduction. Estimates of such a reduction vary from 7 percent (assuming a 20 percent compliance rate with 50 percent of the excluded passengers driving themselves) to 42 percent (assuming a 90 percent compliance rate with 10 percent of the excluded passengers driving themselves). [McKnight AJ, Peck RC; 2002] According to the Insurance Institute for Highway Safety, Highway Loss Data Institute, as of August 2004, 43 states permit minors to receive learner's permits at age 14 or 15; 6 states permit intermediate licensing of minors under the age of 16. Passenger restrictions for the six states permitting minors under the age of 16 intermediate licenses are either non-existent or limit to a small extent the number of non-family passengers under the age of 18. [IIHS, HLDI; 2004] Appendix 1 provides a breakdown of current drivers licensing requirements by state.

4.3   Agricultural Occupations

The nature of the agricultural industry is broad in terms of occupational categories and in comparison with many other industries. The work is highly seasonal, especially in the crop production sector, and farm workers perform a wide variety of tasks depending on the production cycle. As a result, there are relatively few occupational classifications and little specialization among workers. While the BLS segregates equipment operators as a separate occupation, operating machinery is an activity typically performed by the majority of workers within the industry. In terms of youth workers, it is assumed that the largest majority work in occupations as described in Table 2 below.

TABLE 2

BLS STANDARD OCCUPATIONAL CLASSIFICATIONS – FARMING OCCUPATIONS

Standard Occupational Classification (SOC) Code/Title	Description
45-2092—Farm workers and Laborers, Crop, Nursery, and Greenhouse	Manually plant, cultivate, and harvest vegetables, fruits, nuts, horticultural specialties, and field crops. Use hand tools, such as shovels, trowels, hoes, tampers, pruning hooks, shears, and knives. Duties may include tilling soil and applying fertilizers; transplanting, weeding, thinning, or pruning crops; applying pesticides; cleaning, grading, sorting, packing and loading harvested products. May construct trellises, repair fences and farm buildings, or participate in irrigation activities. Exclude "Graders and Sorters, Agricultural Products" (45-2041). Exclude "Forest, Conservation, and Logging Workers" (45-4011 through 45-4029).
45-2091—Agricultural Equipment Operators	Drive and control farm equipment to till soil and to plant, cultivate, and harvest crops. May perform tasks, such as crop baling or hay. May operate stationary equipment to perform post-harvest tasks, such as husking, shelling, threshing, and ginning.
45-2093—Farm workers, farm and ranch animals	Attend to live farm, ranch, or aquacultural animals that may include cattle, sheep, swine, goats, horses and other equines, poultry, finfish, shellfish, and bees. Attend to animals produced for animal products, such as meat, fur, skins, feathers, eggs, milk, and honey. Duties may include feeding, watering, herding, grazing, castrating, branding, de-beaking, weighing, catching, and loading animals. May maintain records on animals; examine animals to detect diseases and injuries; assist in birth deliveries; and administer medications, vaccinations, or insecticides as appropriate. May clean and maintain animal housing areas. Include workers who shear wool from sheep, and collect eggs in hatcheries.
45-2099—Agricultural workers, all others	All agricultural workers not listed separately.

(*Source*: U.S. Department of Labor, Bureau of Labor Statistics. Standard Occupational Classification Codes for 45-0000—Farming, Fishing, and Forestry Occupations. Found at: http://www.bls.gov/soc/soc_r0a0.htm)

5.   DATA ANALYSIS AND INTERPRETATION

The NIOSH recommendation for a revision to the current HO prohibiting youths from operating all types of on-highway and off-highway motor vehicles as well as working as an outside helper on motor vehicles relates to the existing non-agricultural HO concerning motor vehicle

operations across non-agricultural industries in general. In reviewing fatality and injury data for youth workers under the age of 16, it is not clear whether the youths involved were transporting passengers while operating vehicles, nor is the work status of the youths given (i.e., hired employee or working on the family farm). Data regarding off-highway driving and working as an outside helper (NIOSH estimated four fatalities over a six-year period) also raises similar interpretation limitations. However, because very few states permit licensing of drivers younger than 16, it is estimated that the majority of youths operating on-highway motor vehicles would be doing so under a learner's permit, which requires a licensed driver to accompany the youth driver. Based on this provision, if the current HO was interpreted such that the licensed driver constituted a passenger, then the youth would be said to be working illegally. On the other hand, given data regarding off-highway transportation accidents, and in particular ATVs, not only do the highest proportions of accidents occur in the youth population, but the majority of ATV occupational-related accidents, occur o farms. By nature, motor vehicles are not peculiar to the agricultural industry, and as such, injury and fatality data collection efforts may underestimate the frequency and number that occur. As a conservative estimate given the lack of definitive data, it is assumed that one fatality will be avoided each year as a result of implementation of the NIOSH recommendation.

In terms of injuries, the NIOSH provided an estimate of 5,444 vehicle-related injuries to youths under the age of 16 during 1998; 80 percent of these youths were either operating the vehicle or riding elsewhere in or on the vehicle. If the assumption is made that of the 4,355 (80 percent) youths injured, half were employed on non-family owned farms, and then the estimated number of youth injuries that would be avoided as a result of implementation of the NIOSH HO revision is 2,178 annually.

6.   STATE LABOR LAWS

In reviewing the current state child labor laws with regard to minors operating motor vehicles within the agriculture industry and in comparison to NIOSH's proposed HO amendment, it appears that many of the states have adopted child labor laws that mirror federal regulations. In addition, many of the states do not have separate regulations for the agricultural industry and therefore regulations relating to motor vehicles are applicable across all industries. Currently, 17 states specifically exempt agriculture employment from general child labor laws or have no HOs specific to the agricultural industry. Moreover, while the majority of states' agricultural laws mirror the federal practice of limiting or restricting employment to minors under the age of 16, several states apply agricultural regulations to minors under the age of 18. A few states, however, specify a minimum age to work in agriculture-related occupations below the age 14 threshold specified in federal regulations. Specifically in terms of child labor laws regarding motor vehicle operations, none of the states have implemented laws similar to the proposed NIOSH recommendation or that are more stringent that current federal regulations. Appendix 3 provides a synopsis of state child labor laws as relates to the agricultural industry.

7.   IMPACT ON SMALL AND FAMILY-OWNED BUSINESSES

Within the agricultural industry and pursuant to 29 C.F.R. §570.70, HOs are not applicable to youths working on farms operated by their own parents, or on farms operated by persons

standing in place of their parents. In 2002, there were a total of 2,128,982 farms in the United States, 1,909,598 (89.7 percent) of which were individually- or family-owned. An additional 129,593 (6.1 percent) were partnerships and 73,752 (3.5 percent) were corporate-owned. Of the corporate-owned farms, 66,667 were family-held corporations. The average size of the farms was 426 acres for individually- or family-owned farms, 1,130 acres for partnerships, and 1,469 acres for corporations. [USDA, NASS, Census of Agriculture; 2002] Based on these figures, it is estimated that implementation of this HO amendment will have minimal impact on a significant number of businesses within the industry. Appendix 2 provides additional detail as to the number of farms, broken down by NAICS code, including acreage (aggregate and average).

8.   FEASIBILITY OF IMPLEMENTATION

In reviewing the size, occupations, and geographically disbursed nature of the agricultural industry, it is foreseeable that there will be some difficulty associated with implementing revised HOs relating to youths operating motor vehicles. In addition, the recommended amendment increases the types of activities youths would be prohibited from performing, such as operating motor vehicles in general, both on-highway and off-highway, which may further complicate implementation efforts.

9.   EVALUATION OF COSTS AND BENEFITS

9.1   Quantitative

The objective of the quantitative analysis is to distinguish between two alternatives, maintaining the "status quo" (not implementing the proposed changes to the HO as defined by the NIOSH recommendation) or full implementation of the HO, by systematically identifying the various costs and benefits associated with each alternative and assigning a derived monetized value to compare the net effect. As an end result, both the Net Present Value (NPV) and Benefit to Cost Ratio (BCR) are used as comparison ratios to economically value the alternatives in terms of highest benefit and lowest cost. The NPV ratio shows the discounted effect of the monetized costs and benefits, which include injury, illness, and fatality reduction, promulgation and implementation costs to industry and government, and post-implementation enforcement costs. The BCR ratio reflects the total discounted benefits of implementing the HO divided by the total discounted costs, which are primarily the costs associated with promulgation, implementation, and post-implementation. More specific methodology is discussed below.

9.1.1   Methodology

In conducting the quantitative analysis, the following methodology was used to formulate the various costs and benefits associated with each alternative.

1. Costs and benefits are examined over a 10-year planning horizon.

2. In order to reflect benefits and costs equally, both are presented in constant Fiscal Year (FY) 04 dollars. All prior year, current, and any future costs reflect the level of prices of base year 2004, which has the equivalent effect of inflation removed.

3. Both a 3 percent and a 7 percent discount rate are used. The 3 percent rate is the "social rate of discount," which attempts to compensate for the social implication of the analysis, while the 7 percent rate is the discount rate as prescribed under OMB guidance.

4. Any adjustments for inflation are made using the GDP Deflator index and are converted to FY04 dollars.

5. The incremental approach examines the net effect of implementing the HO versus not implementing the HO. The full value approach provides the full Net Present Value (NPV) for both alternatives equally.

6. Non-fatal injuries and illnesses are valued to industry using a cost-of-illness approach. Estimates for industry costs are derived using a cost-per-fatality figure of $25,686 and cost-per-injury figure of $6,262 for disabling injuries (estimated to be 40 percent of all injuries occurring annually) and $431 for non-disabling injuries. [Leigh JP, McCurdy SA, Schenker MB; 2001] Estimates for individual costs are calculated based on average annual number of injuries and illnesses, multiplied by a Willingness-to-Pay (WTP) factor of $50,000 per injury.

7. Fatalities are estimated using a value of $5 million per life and assuming an average of 1 fatality annually for youths under age 16.

8. Costs to industry are costs associated with implementing the order based on an average cost of implementing workplace regulatory changes of $319.58 per affected employee. This cost includes workforce education, worker replacement costs, and any wage differential costs. The costs do not include transfer costs, however, which have an overall effect on the economy (measured by price increases) but are outside the scope of this analysis. [Crain WM, Hopkins TD; 2001]

9. Costs to government include cost to implement the order as well as surveillance costs attributed to enforcing the order. Federal and state enforcement costs are derived using historical data on past child labor investigations, including number of investigations conducted; average time spent on investigations, total man-hours expended and average investigator wages. Average penalties are not calculated as they are assumed to be wash costs for this analysis (cost to industry; benefit to government).

9.1.2   Assumptions and Constraints (Specific to the Quantitative Analysis)

In addition to the general assumptions and constraints described in Section 2 above, the following are more specific assumptions that relate specifically to the quantitative analysis.

1. Implementation of the HO, if adopted, will not occur until FY05. Year 0 (FY04) includes some costs attributed to government implementation; however, the full effects, including benefits, of implementation do not occur until FY05.

2. It is assumed that the injury and illness rate will continue indefinitely without implementation of the HO.

3. The proportion of disabling injuries is estimated to be 40 percent of all agricultural injuries and is based on historical data collected in agricultural injury studies.

4. The cost to industry is estimated based on an estimated number of youth workers of 84,570.

9.1.3   Results

Table 3 presents the results of the analysis. More in-depth views of the underlying estimates are provided in Appendices 3 and 4.

The overall NPV of the "With Implementation" approach is $226,338 million (3 percent discount rate) and $210,072 million (7 percent discount rate), while the overall NPV of the "Without Implementation" approach is $1,284 billion (3 percent discount rate) and $1,077 billion (7 percent discount rate). Table 2 presents the results of the baseline analysis; more in-depth views of the underlying estimates are provided in Appendices 3 and 4.

TABLE 3

WITH IMPLEMENTATION EFFECT - NPV @ 3 PERCENT AND 7 PERCENT
(000s)

Year	NPV @ 3 Percent			NPV @ 7 Percent		
	Benefits/Cost Avoidances (Costs) to Individuals	*Benefits/Cost Avoidances (Costs) to Industry*	*Benefits/Cost Avoidances (Costs) to Government*	*Benefits/Cost Avoidances (Costs) to Individuals*	*Benefits/Cost Avoidances (Costs) to Industry*	*Benefits/Cost Avoidances (Costs) to Government*
2004 (Year 0)	$0	$0	($223)	$0	$0	($223)
2005 (Year 1)	$110,583	($341)	($919)	$106,449	($329)	($885)
2006 (Year 2)	$107,362	$5,697	$252	$99,485	$5,279	$234
2007 (Year 3)	$104,235	$5,531	$1,243	$92,976	$4,934	$1,108
2008 (Year 4)	$101,199	$5,370	$2,272	$86,894	$4,611	$1,951
2009 (Year 5)	$98,251	$5,214	$3,344	$81,209	$4,310	$2,764
2010 (Year 6)	$95,389	$5,062	$4,462	$75,896	$4,028	$3,550
2011 (Year 7)	$92,611	$4,915	$5,630	$70,931	$3,764	$4,312
2012 (Year 8)	$89,914	$4,771	$6,853	$66,291	$3,518	$5,052
2013 (Year 9)	$87,295	$4,633	$8,134	$61,954	$3,288	$5,772
2014 (Year 10)	$84,752	$4,498	$9,478	$57,901	$3,073	$6,475
Total NPV:	$971,590	$45,350	$40,526	$799,986	$36,476	$30,112
Overall Net Benefit (Cost):	$1,057,466			$866,573		
BCR:	4.67			4.13		

9.2　Qualitative

Several factors are not captured in the quantitative analysis as a result of other limitations, including overall data issues. These factors, however, are relevant and should also be considered in the overall analysis. Table 4 depicts qualitative factors as well as the potential impact on the individual, industry, and/or government as estimated based on the overall analysis of literature, facts, and information.

- *Economic feasibility and impact.* To determine both the economic feasibility and impact of implementing the revision to this HO, some factors to consider are 1) average profit margin within the affected industry 2) average annual number of injuries, illnesses, and fatalities; 3) number of businesses affected; 4) current regulatory environment; and 5) nature of the industry, including trends, rate of growth, etc. Because of the substantial number of motor vehicle-related injuries estimated to occur annually in the youth population, increasing the scope of this HO as recommended should have a significant impact on youth workers.

- *Alternative to a complete ban.* Changes in state legislation regarding driver's licensing requirements, and particularly the graduated licensing systems, are designed specifically to impact the accident rate in youth drivers. However, these changes will not eliminate the dangers associated with other activities frequently performed on farms, such as riding in trucks working as a helper and operating ATVs. These other types of activities addressed in the NIOSH recommendation are inherently dangerous, and more stringent guidelines and safety standards alone are not sufficient enough to eliminate the risk.

- *Illegal working.* Although there appear to be numerous organizations, including educational institutions and universities with agricultural-related programs that perform outreach activities on a consistent basis, it would appear from existing data that compliance with implementation of this HO may still be difficult, especially across smaller farms. There also exists a large migrant farm population, data on which is more difficult to collect, which also may compound the issue of illegal working.

- *Technological trends.* In terms of technological advances, there are relatively few innovations in the areas of motor vehicles that would have any impact on the scope of this HO. ATV design, which has changed since the 1980s in terms of the number of wheels on vehicles, has somewhat lessened the rollover dangers of these vehicles, but such dangers are inherent in the overall vehicle design.

- *Days Away From School.* In comparison to the DAFW for all workers who are injured as a result of motor vehicle accidents, including the high disability rate, youths involved in these types accidents most likely have a higher than average median DAFW. With an average DAFW of 10.59 days for all workers, it is estimated that injuries in youth workers result in a significant number of days away from school.

TABLE 4

IMPACT OF QUALITATIVE FACTORS

FACTOR	POTENTIAL IMPACT
Economic feasibility and impact	High
Illegal working	Moderate
Technological impact	Low
Days away from school	High

Definitions*:*
No Impact: Factor has no effect, either positively or negatively, on individuals, industry, and/or government.
Low Impact: Factor may have some effect, either positively or negatively, on individuals, industry, and/or government.
Moderate Impact: Factor will most likely have an effect, either positively or negatively, on individuals, industry, and/or government.
High Impact: Factor will have an effect, either positively or negatively, on individuals, industry, and/or government.

10. SENSITIVITY ANALYSIS

In order to more clearly estimate the effects of certain assumptions and other variables given the degree of overall uncertainty of the data, a sensitivity analysis is conducted on several of these key assumptions. Changing each assumption individually while holding all other variables constant, the sensitivity analysis reflects the overall change to NPV at both the 3 percent and 7 percent discount rates and reflects the level of sensitivity the overall results are to the change. Further, because the quantitative results shown in Section 9 above support the "Without Implementation" approach, a fortiori approach, whereby the assumptions are weighted against the more favorable approach, is used.

Following is a list of assumptions challenged as well as the supporting rationale. In addition, Table 5 presents the numerical results of the analysis, including the percentage change from the baseline analysis.

- *The estimated number of injuries occurring annually is 50 percent lower.* Because of the extrapolation used to predict the number of youths injured annually as a result of motor vehicle accidents, and in view of the decreasing number of working youths under the age of 16 in the agricultural industry between 1998 and 2002 (166,117 in 1998 versus 84,570 in 2002), a decrease in the estimated number of injuries assumes that these trends coincide.

- *The disability rate is 10 percent annually.* Again, given the overall assumptions made and lack of correlating data, it is feasible that the number of disabling injuries is less than the baseline estimate of 40 percent per year.

- *Industry implementation costs are 100 percent higher.* Because of the diverse nature of motor vehicle-related accidents across the agricultural industry, the costs to industry to implement the HO amendment may be significantly higher than the original estimate.

- *Full implementation occurs by Year 5.* Assuming that implementation of this amendment may be easier than originally anticipated; revising the 10-year horizon to a 5-year horizon predicts that the full impact of implementation of this HO will occur earlier.

TABLE 5

RESULTS OF SENSITIVITY ANALYSIS
(000's)

	NPV @ 3%		NPV @ 7%	
Change in Assumption	*Incremental Benefits (Costs)*	*% Change from Baseline*	*Incremental Benefits (Costs)*	*% Change from Baseline*
Injury rate is 50 percent lower.	$543,633	48.59%	$444,567	48.70%
Disability rate is 10 percent per year.	$980,741	7.26%	$805,358	7.06%
Industry implementation costs are 100 percent higher.	$1,051,256	0.59%	$860,596	0.69%
Full implementation occurs by Year 5.	($549,070)	151.92%	($490,768)	156.63%

11.   SUMMARY AND CONCLUSIONS

The proposed NIOSH recommendation is to amend the current HO regarding youths operating motor vehicles to 1) eliminate the passenger requirement; 2) add off-highway motor vehicles, and 3) realign the tractor passenger component with the current agricultural tractor-related HO. Because of the specificities of the proposed recommendation, a review of industry data regarding fatalities and injuries did not yield many data specific enough to determine the long-term effects implementation would have on the youth population. Using a conservative estimate of one fatality per year and 2,178 injuries avoided yielded a quantifiable net benefit of $1,056 billion at a 3 percent discount rate and $866,563 million at a 7 percent discount rate. Further, because of the high number of injuries estimated to occur as a result of motor vehicle accidents, the baseline

analysis is not particularly sensitive to changes in assumptions concerning decreases in the injury or estimated disability rate; a decrease in the planning horizon, however, from 10 years to 5 years yielded an overall net loss.

From a qualitative perspective, it is estimated that prohibiting youth workers from operating motor vehicles, both on- and off-highway, will have a significant impact on the overall youth injury rate as well as on the estimated median DAFW and days away from school.

APPENDIX 1: DRIVER'S LICENSE AGE REQUIREMENTS BY STATE

State	Minimum Age – Learner Permit	Minimum Age – Intermediate Stage	Passenger Restriction
Alabama	15	16	No more than 3 passengers (parents and guardians excepted)
Alaska	14	16	First 6 mos.: No passengers unless supervised by a 21-year-old driver (family member excepted).
Arizona	15, 7 mos.	No intermediate stage	None
Arkansas	14	n/a	No passenger restriction.
California	15, 6 mos.	16	First 6 mos.: No passengers younger than 20 unless supervised by 25-year-old driver (immediate family members excepted)
Colorado	15	16	None
Connecticut	16	16, 4 mos.	First 3 mos.: No passengers; second 3 mos.: No passengers (family members excepted)
Delaware	15, 10 mos.	16, 4 mos.	No more than 2 passengers
District of Columbia	16	16, 6 mos.	First 6 mos.: No passengers unless supervised by a 21-year-old driver (family member excepted); thereafter, no more than 2 passengers (family members excepted)
Florida	15	6	None
Georgia	15	16	First 6 mos.: No passengers (family members excepted); thereafter, no more than 3 passengers younger than 21 (family members excepted)
Hawaii	15, 6 mos.	No intermediate stage	None
Idaho	14, 6 mos.	15	None
Illinois	15	16	First 6 mos.: No more than 1 passenger younger than 20 (family members excepted)
Indiana	15	16, 1 mo.	First 90 days: no passengers unless supervised by 21-year-old driver
Iowa	14	16	None
Kansas	14	No intermediate stage	None

State	Minimum Age – Learner Permit	Minimum Age – Intermediate Stage	Passenger Restriction
Kentucky	16	No intermediate stage	None
Louisiana	15	16	None
Maine	15	16	First 180 days: No passengers unless supervised by 20-year-old driver (family members excepted)
Maryland	15, 9 mos.	16, 1 mo.	None
Massachusetts	16	16, 6 mos.	First 6 mos.: No passengers younger than 18 unless supervised by a 21-year-old driver (family members excepted)
Michigan	14, 9 mos.	16	None
Minnesota	15	16 (provisional license)	None
Mississippi	15	15, 6 mos.	None
Missouri	15	16	None
Montana	14, 6 mos.	No intermediate stage	None
Nebraska	15	16	None
Nevada	15, 6 mos.	15, 9 mos.	If < 16, first 90 days—no passengers younger than 18 (family members excepted). If 16 – 17, first 60 days—no passengers younger than 18 (family members excepted). If 17 – 18, first 30 days—no passengers younger than 18 (family members excepted).
New Hampshire	15, 6 mos.	16	First 6 mos.: No more than one passenger younger than 25 unless supervised by a 25-year-old driver (family members excepted).
New Jersey	16	17	No more than 1 passenger unless supervised by 21-year-old driver (household members excepted).
New Mexico	15	15, 6 mos.	No more than 1 passenger younger than 21 (family members excepted).
New York	16	16, 6 mos.	No more than 2 passengers younger than 21 unless supervised by a 21-year-old driver (family members excepted).
North Carolina	15	16	No more than 1 passenger than 21 (family members exempted); if a family member younger than 21 is already

State	Minimum Age – Learner Permit	Minimum Age – Intermediate Stage	Passenger Restriction
			a passenger, then no other passengers < 21 who are not family members.
North Dakota	14	No intermediate stage	None
Ohio	15, 6 mos.	16	None
Oklahoma	15, 6 mos.	No intermediate stage	None
Oregon	15	16	First 6 mos.: No passengers < 20 (family members excepted). Second 6 mos.: No more than 3 passengers < 20 (family members excepted).
Pennsylvania	16	16, 6 mos.	None
Rhode Island	16	16, 6 mos.	None
South Carolina	15	15, 6 mos.	No more than 2 passengers < 21 unless supervised by a 21-year-old driver (family members excepted and driving students to and from school excepted).
South Dakota	14	14, 6 mos. (14, 3 mos. w/driver education)	None
Tennessee	15	16	No more than 1 passenger unless supervised by 21-year-old driver (family members excepted).
Texas	15	16	No more than 1 passenger younger than 21 (family members excepted).
Utah	15, 6 mos.	16	First 6 mos.: No passengers unless supervised by 21-year-old driver (family members excepted).
Vermont	15	16	First 3 mos.: No passengers unless supervised by a licensed parent/guardian, driving instructor, or licensed 25 year-old driver. Second 3 mos.: Same as first 3 mos. (family members excepted).
Virginia	15, 6 mos.	16, 3 mos.	First 12 mos.: No more than 1 passenger < 18; until 18: No more than 3 passengers < 18 (family members excepted).
Washington	15	16	First 6 mos.: No passengers < 20 (family members excepted); second 6 mos.: No more than 3 passengers< 20.

State	Minimum Age – Learner Permit	Minimum Age – Intermediate Stage	Passenger Restriction
West Virginia	15	16	No more than 3 passengers younger than 19 (family members excepted)
Wisconsin	15, 6 mos.	16	No more than 1 passenger (family members excepted)
Wyoming	15	No intermediate stage	None

(Source: Insurance Institute for Highway Safety, Highway Loss Data Institute. *U.S. Licensing Systems for Young Drivers: Laws as of August 2004.* Found at: http://www.hwysafety.org/safety_facts/state_laws/us_licensing_systems.pdf)

APPENDIX 2: SUMMARY BY NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM: 2002

Item	Total	Oilseed and grain farming (1111)	Vegetable and melon farming (1112)	Fruit and tree nut farming (1113)	Greenhouse, nursery, and floriculture production (1114)	Other Crop Farming (1119)			
						Total	Tobacco farming (11191)	Cotton farming (11192)	Sugarcane, hay, and other crop farming (11193, 11194, 11198)
Farms (Number)	2,128,982	349,023	34,624	95,680	64,366	442,932	37,013	14,476	391,443
(Percent)	100.0	16.4	1.6	4.5	3.0	20.8	1.7	0.7	18.4
Land (acres)	938,279,056	242,218,224	11,215,546	11,525,130	4,819,149	118,327,994	6,473,472	16,850,840	95,003,682
Avg. size (acres)	441	694	324	120	75	267	175	1,164	243

Item	Beef and cattle ranching (112111)	Cattle feedlots (112112)	Dairy cattle and milk production (11212)	Hog and pig farming (1122)	Poultry and egg production (1123)	Sheep and goat farming (1124)	Animal aquaculture and other animal production (1125, 1129)
Farms (Number)	664,431	55,472	72,537	33,655	44,219	43,891	228,152
(Percent)	31.2	2.6	3.4	1.5	2.1	2.1	10.7
Land (acres)	419,821,930	25,984,434	27,351,777	8,317,127	6,153,409	17,910,791	44,633,545
Avg. size (acres)	632	468	377	247	139	408	196

(*Source:* USDA, NASS, 2002 Census of Agriculture – United States Data)

APPENDIX 3: DETAILS OF THE CALCULATION OF COSTS AND BENEFITS

Without Implementation				TOTAL
	Fatalities and Non-fatalities	Promulgation	Implementation/ Surveillance	
Individuals[1]	$113,900,000	$0	$0	$113,900,000
Industry[2]	$6,044,372	$0	$0	$6,044,372
Government[3]	$9,011,693	$0	$0	$9,011,693

[1] Individual costs are calculated as follows: {$5,000,000 (VSL) x 1 (avg. number of fatalities)} + {2178 (avg. number of injuries/illnesses) x $50,000 (WTP injury)}

[2] Industry costs are calculated as follows: {($25,686 x 1 (annual average number of fatalities)) + ($6,262 x (2178 x 0.4) (annual average number of injuries x assumed disability rate)) + ($431 x (2178 x 0.6) (annual number of non-disabling injuries)}

[3] Government cost includes Medicaid and disability income paid to individuals and their beneficiaries and is calculated as follows: $10,344 (annual cost of Social Security benefit) x {2178 x .4 (percentage of injuries/illnesses estimated to result in long-term disability)}. As an ongoing government cost, and as new workers are assumed to be added to this burden annually, the base cost is escalated by 10 percent annually.

Annual Costs - Without Implementation

	Fiscal Year											Total
	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	
Individuals												
Death/Illnesses/Injuries	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$ 1,252,900,000
Promulgation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Implementation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Industry												
Death/Illnesses/Injuries	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$ 66,488,094
Promulgation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Implementation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Government												
Death/Illnesses/Injuries	$9,011,693	$9,912,862	$10,904,148	$11,994,563	$13,194,019	$14,513,421	$15,964,764	$17,561,240	$19,317,364	$21,249,100	$23,374,010	$ 166,997,185
Promulgation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Implementation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$128,956,065	$129,857,234	$130,848,520	$131,938,935	$133,138,392	$134,457,794	$135,909,136	$137,505,612	$139,261,736	$141,193,472	$143,318,382	$ 1,486,385,279

Annual Costs - With Implementation

	Fiscal Year											Total
	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	
Individuals												
Death/Illnesses/Injuries	$113,900,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$113,900,000
Promulgation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Implementation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Industry												
Death/Illnesses/Injuries	$6,044,372	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$ 6,044,372
Promulgation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$ -
Implementation	$0	$6,396,033	$0	$0	$0	$0	$0	$0	$0	$0	$0	$ 6,396,033
Government												
Death/Illnesses/Injuries	$9,011,693	$9,011,693	$9,011,693	$9,011,693	$9,011,693	$9,011,693	$9,011,693	$9,011,693	$9,011,693	$9,011,693	$9,011,693	$ 99,128,621
Promulgation	$222,711	$222,711	$0	$0	$0	$0	$0	$0	$0	$0	$0	$ 445,423
Implementation	$ -	$ 1,625,000	$ 1,625,000	$ 1,625,000	$ 1,625,000	$ 1,625,000	$ 1,625,000	$ 1,625,000	$ 1,625,000	$ 1,625,000	$ 1,625,000	$ 16,250,000
Total	$129,178,776	$17,255,437	$10,636,693	$10,636,693	$10,636,693	$10,636,693	$10,636,693	$10,636,693	$10,636,693	$10,636,693	$10,636,693	$242,164,449

APPENDIX 4: NET PRESENT VALUE (NPV) CALCULATIONS

	COST/BENEFIT ANALYSIS (FULL VALUE APPROACH) (@ 3 PERCENT)											
Fiscal Year	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**TOTAL**
Year of Implementation	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
Without Implementation Alternative - Cost to Individuals	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	1,252,900,000
With Implementation Alternative - Cost to Individuals	$ 113,900,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	113,900,000
Without Implementation Alternative - Cost to Industry	$ 6,044,372	$ 6,044,372	$ 6,044,372	$ 6,044,372	$ 6,044,372	$ 6,044,372	$ 6,044,372	$ 6,044,372	$ 6,044,372	$ 6,044,372	$ 6,044,372	66,488,094
With Implementation Alternative - Cost to Industry	$ 6,044,372	$ 6,396,033	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	12,440,405
Without Implementation Alternative - Cost to Government	$ 9,011,693	$ 9,912,862	$ 10,904,148	$ 11,994,563	$ 13,194,019	$ 14,513,421	$ 15,964,764	$ 17,561,240	$ 19,317,364	$ 21,249,100	$ 23,374,010	166,997,185
With Implementation Alternative - Cost to Government	$ 9,234,404	$ 10,859,404	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	115,824,043
Discount Factor (@ 3%)	1.00	0.971	0.943	0.915	0.888	0.863	0.837	0.813	0.789	0.766	0.744	
Discounted Without Implementation Alternative - Cost to Individuals	$ 113,900,000	$ 110,582,524	$ 107,361,674	$ 104,234,635	$ 101,198,675	$ 98,251,141	$ 95,389,457	$ 92,611,123	$ 89,913,712	$ 87,294,866	$ 84,752,297	1,085,490,103
Discounted With Implementation Alternative - Cost to Individuals	$ 113,900,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	113,900,000
Discounted Without Implementation Alternative - Cost to Industry	$ 6,044,372	$ 5,868,323	$ 5,697,401	$ 5,531,457	$ 5,370,346	$ 5,213,929	$ 5,062,067	$ 4,914,628	$ 4,771,483	$ 4,632,508	$ 4,497,581	57,604,093
Discounted With Implementation Alternative - Cost to Industry	$ 6,044,372	$ 6,209,741	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	12,254,113
Discounted Without Implementation Alternative - Cost to Government	$ 9,011,693	$ 9,624,138	$ 10,278,206	$ 10,976,724	$ 11,722,715	$ 12,519,405	$ 13,370,238	$ 14,278,895	$ 15,249,305	$ 16,285,666	$ 17,392,459	140,709,444
Discounted With Implementation Alternative - Cost to Government	$ 9,234,404	$ 10,543,111	$ 10,026,103	$ 9,734,081	$ 9,450,564	$ 9,175,305	$ 8,908,063	$ 8,648,605	$ 8,396,704	$ 8,152,139	$ 7,914,698	100,183,776
Net Present Value (NPV) - Without Implementation Alternative	$ 128,956,065	$ 126,074,985	$ 123,337,280	$ 120,742,816	$ 118,291,737	$ 115,984,474	$ 113,821,761	$ 111,804,646	$ 109,934,500	$ 108,213,040	$ 106,642,336	$ 1,283,803,640
Net Present Value (NPV) - With Implementation Alternative	$ 129,178,776	$ 16,752,852	$ 10,026,103	$ 9,734,081	$ 9,450,564	$ 9,175,305	$ 8,908,063	$ 8,648,605	$ 8,396,704	$ 8,152,139	$ 7,914,698	$ 226,337,889
Benefit to Cost Ratio (BCR) - Without Implementation Alternative												(0.82)
Benefit to Cost Ratio (BCR) - With Implementation Alternative												4.67

[1] The discount factor is calculated as follows:

$1/(1 + \text{discount rate})^t$ where t = year of life cycle and the discount rate.

	COST/BENEFIT ANALYSIS (FULL VALUE APPROACH) (@ 7 PERCENT)											
Fiscal Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	**TOTAL**
Year of Implementation	0	1	2	3	4	5	6	7	8	9	10	
Without Implementation Alternative - Cost to Individuals	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 1,252,900,000
With Implementation Alternative - Cost to Individuals	$ 113,900,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 113,900,000
Without Implementation Alternative - Cost to Industry	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$ 66,488,094
With Implementation Alternative - Cost to Industry	$ 6,044,372	$ 6,396,033	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,440,405
Without Implementation Alternative - Cost to Government	$ 9,011,693	$ 9,912,862	$ 10,904,148	$ 11,994,563	$ 13,194,019	$ 14,513,421	$ 15,964,764	$ 17,561,240	$ 19,317,364	$ 21,249,100	$ 23,374,010	$ 166,997,185
With Implementation Alternative - Cost to Government	$ 9,234,404	$ 10,859,404	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 115,824,043
Discount Factor (@ 7%)	1.00	0.935	0.873	0.816	0.763	0.713	0.666	0.623	0.582	0.544	0.508	
Discounted Without Implementation Alternative - Cost to Individuals	$ 113,900,000	$ 106,448,598	$ 99,484,671	$ 92,976,328	$ 86,893,765	$ 81,209,126	$ 75,896,379	$ 70,931,196	$ 66,290,837	$ 61,954,053	$ 57,900,984	$ 913,885,938
Discounted With Implementation Alternative - Cost to Individuals	$ 113,900,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 113,900,000
Discounted Without Implementation Alternative - Cost to Industry	$ 6,044,372	$ 5,648,946	$ 5,279,389	$ 4,934,008	$ 4,611,223	$ 4,309,554	$ 4,027,620	$ 3,764,131	$ 3,517,880	$ 3,287,738	$ 3,072,652	$ 48,497,513
Discounted With Implementation Alternative - Cost to Industry	$ 6,044,372	$ 5,977,601	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,021,973
Discounted Without Implementation Alternative - Cost to Government	$ 9,011,693	$ 9,264,357	$ 9,524,105	$ 9,791,136	$ 10,065,654	$ 10,347,869	$ 10,637,996	$ 10,936,258	$ 11,242,882	$ 11,558,103	$ 11,882,162	$ 114,262,214
Discounted With Implementation Alternative - Cost to Government	$ 9,234,404	$ 10,148,976	$ 9,290,499	$ 8,682,710	$ 8,114,682	$ 7,583,815	$ 7,087,678	$ 6,623,998	$ 6,190,652	$ 5,785,656	$ 5,407,155	$ 84,150,225
Net Present Value (NPV) - Without Implementation Alternative	$ 128,956,065	$ 121,361,901	$ 114,288,165	$ 107,701,473	$ 101,570,642	$ 95,866,549	$ 90,561,996	$ 85,631,584	$ 81,051,598	$ 76,799,894	$ 72,855,798	$ 1,076,645,665
Net Present Value (NPV) - With Implementation Alternative	$ 129,178,776	$ 16,126,577	$ 9,290,499	$ 8,682,710	$ 8,114,682	$ 7,583,815	$ 7,087,678	$ 6,623,998	$ 6,190,652	$ 5,785,656	$ 5,407,155	$ 210,072,198
Benefit to Cost Ratio (BCR) - Without Implementation Alternative												(0.80)
Benefit to Cost Ratio (BCR) - With Implementation Alternative												4.13

[1] The discount factor is calculated as follows:

$1/(1 + \text{discount rate})^t$ where t = year of life cycle and the discount rate.

COST/BENEFIT ANALYSIS NET EFFECT (INCREMENTAL APPROACH) (@ 3 PERCENT)											
Fiscal Year	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**TOTAL**
Year of Implementation	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
Without Implementation Alternative - Cost to Individuals	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$113,900,000	$ 1,252,900,000
With Implementation Alternative - Cost to Individuals	$113,900,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$ 113,900,000
Without Implementation Alternative - Cost to Industry	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$6,044,372	$ 66,488,094
With Implementation Alternative - Cost to Industry	$ 6,044,372	$ 6,396,033	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,440,405
Without Implementation Alternative - Cost to Government	$9,011,693	$9,912,862	$10,904,148	$11,994,563	$13,194,019	$14,513,421	$15,964,764	$17,561,240	$19,317,364	$21,249,100	$23,374,010	$ 166,997,185
With Implementation Alternative - Cost to Government	$ 9,234,404	$ 10,859,404	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 115,824,043
Net Cost (Cost Savings/Avoidances) - Individual	$ -	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (1,139,000,000)
Net Cost (Cost Savings/Avoidances) - Industry	$ -	$ 351,661	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (54,047,689)
Net Cost (Cost Savings/Avoidances) - Government	$ 222,711	$ 946,542	$ (267,455)	$ (1,357,870)	$ (2,557,327)	$ (3,876,729)	$ (5,328,071)	$ (6,924,547)	$ (8,680,671)	$ (10,612,407)	$ (12,737,317)	$ (51,173,141)
Discount Factor (@ 3%)	1.00	0.971	0.943	0.915	0.888	0.863	0.837	0.813	0.789	0.766	0.744	
Discounted Cost (Cost Savings/Avoidances) - Individual	$ -	$ (110,582,524)	$ (107,361,674)	$ (104,234,635)	$ (101,198,675)	$ (98,251,141)	$ (95,389,457)	$ (92,611,123)	$ (89,913,712)	$ (87,294,866)	$ (84,752,297)	$ (971,590,103)
Discounted Cost (Cost Savings/Avoidances) - Industry	$ -	$ 341,418	$ (5,697,401)	$ (5,531,457)	$ (5,370,346)	$ (5,213,929)	$ (5,062,067)	$ (4,914,628)	$ (4,771,483)	$ (4,632,508)	$ (4,497,581)	$ (45,349,980)
Discounted Cost (Cost Savings/Avoidances) - Government	$ 222,711	$ 918,973	$ (252,102)	$ (1,242,644)	$ (2,272,152)	$ (3,344,100)	$ (4,462,175)	$ (5,630,290)	$ (6,852,602)	$ (8,133,527)	$ (9,477,760)	$ (40,525,668)
Net Discounted Cost (Cost Savings/Avoidances)	$ 222,711	$ (109,322,133)	$ (113,311,177)	$ (111,008,736)	$ (108,841,173)	$ (106,809,169)	$ (104,913,699)	$ (103,156,041)	$ (101,537,797)	$ (100,060,900)	$ (98,727,638)	$ (1,057,465,752)
Cumulative Discounted Costs for Without Implementation Alternative	$ 128,956,065	$ 255,031,050	$ 378,368,330	$ 499,111,146	$ 617,402,883	$ 733,387,356	$ 847,209,118	$ 959,013,764	$ 1,068,948,264	$ 1,177,161,304	$ 1,283,803,640	
Cumulative Discounted Costs for With Implementation Alternative	$ 129,178,776	$ 145,931,628	$ 155,957,731	$ 165,691,812	$ 175,142,375	$ 184,317,680	$ 193,225,743	$ 201,874,347	$ 210,271,051	$ 218,423,190	$ 226,337,889	
Net Present Value (NPV)	$ 222,711	$ (109,099,422)	$ (222,410,599)	$ (333,419,334)	$ (442,260,507)	$ (549,069,676)	$ (653,983,375)	$ (757,139,416)	$ (858,677,213)	$ (958,738,114)	$ (1,057,465,752)	
Benefits to Cost Ratio (BCR)												4.67

[1] The discount factor is calculated as follows:

   $1/(1 + \text{discount rate})^t$ where t = year of life cycle and the discount rate.

[2] Assumes no time lag between year of implementation and year cost savings/avoidance begins.

COST/BENEFIT ANALYSIS NET EFFECT (INCREMENTAL APPROACH) (@ 7 PERCENT)												
Fiscal Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	**TOTAL**
Year of Implementation	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
Without Implementation Alternative - Cost to Individuals	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 113,900,000	$ 1,252,900,000
With Implementation Alternative - Cost to Individuals	$113,900,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$ 113,900,000
Without Implementation Alternative - Cost to Industry	$ 6,044,372	$ 6,044,372	6,044,372	6,044,372	6,044,372	6,044,372	6,044,372	6,044,372	6,044,372	6,044,372	6,044,372	66,488,094
With Implementation Alternative - Cost to Industry	$ 6,044,372	$ 6,396,033	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	12,440,405
Without Implementation Alternative - Cost to Government	$9,011,693	$9,912,862	$10,904,148	$11,994,563	$13,194,019	$14,513,421	$15,964,764	$17,561,240	$19,317,364	$21,249,100	$23,374,010	$ 166,997,185
With Implementation Alternative - Cost to Government	$ 9,234,404	$ 10,859,404	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	$ 10,636,693	115,824,043
Net Cost (Cost Savings/Avoidances) - Individual	$ -	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (113,900,000)	$ (1,139,000,000)
Net Cost (Cost Savings/Avoidances) - Industry	$ -	$ 351,661	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (6,044,372)	$ (54,047,689)
Net Cost (Cost Savings/Avoidances) - Government	$ 222,711	$ 946,542	$ (267,455)	$ (1,357,870)	$ (2,557,327)	$ (3,876,729)	$ (5,328,071)	$ (6,924,547)	$ (8,680,671)	$ (10,612,407)	$ (12,737,317)	$ (51,173,141)
Discount Factor (@ 7%)	1.00	0.935	0.873	0.816	0.763	0.713	0.666	0.623	0.582	0.544	0.508	
Discounted Cost (Cost Savings/Avoidances) - Individual	$ -	$ (106,448,598)	$ (99,484,671)	$ (92,976,328)	$ (86,893,765)	$ (81,209,126)	$ (75,896,379)	$ (70,931,196)	$ (66,290,837)	$ (61,954,053)	$ (57,900,984)	$ (799,985,938)
Discounted Cost (Cost Savings/Avoidances) - Industry	$ -	$ 328,655	$ (5,279,389)	$ (4,934,008)	$ (4,611,223)	$ (4,309,554)	$ (4,027,620)	$ (3,764,131)	$ (3,517,880)	$ (3,287,738)	$ (3,072,652)	$ (36,475,540)
Discounted Cost (Cost Savings/Avoidances) - Government	$ 222,711	$ 884,619	$ (233,606)	$ (1,108,427)	$ (1,950,972)	$ (2,764,054)	$ (3,550,318)	$ (4,312,260)	$ (5,052,230)	$ (5,772,446)	$ (6,475,006)	$ (30,111,990)
Net Discounted Cost (Cost Savings/Avoidances)	$ 222,711	$ (105,235,324)	$ (104,997,666)	$ (99,018,763)	$ (93,455,960)	$ (88,282,734)	$ (83,474,318)	$ (79,007,587)	$ (74,860,946)	$ (71,014,238)	$ (67,448,643)	$ (866,573,467)
Cumulative Discounted Costs for Without Implementation Alternative	$ 128,956,065	$ 250,317,966	$ 364,606,132	$ 472,307,604	$ 573,878,246	$ 669,744,794	$ 760,306,790	$ 845,938,375	$ 926,989,973	$ 1,003,789,867	$ 1,076,645,665	
Cumulative Discounted Costs for With Implementation Alternative	$ 129,178,776	$ 145,305,353	$ 154,595,852	$ 163,278,562	$ 171,393,244	$ 178,977,059	$ 186,064,737	$ 192,688,734	$ 198,879,386	$ 204,665,043	$ 210,072,198	
Net Present Value (NPV)	$ 222,711	$ (105,012,613)	$ (210,010,279)	$ (309,029,042)	$ (402,485,002)	$ (490,767,735)	$ (574,242,053)	$ (653,249,640)	$ (728,110,586)	$ (799,124,824)	$ (866,573,467)	
Benefits to Cost Ratio (BCR)												4.13

[1] The discount factor is calculated as follows:

$1/(1 + \text{discount rate})^t$ where t = year of life cycle and the discount rate.

[2] Assumes no time lag between year of implementation and year cost savings/avoidance begins.

APPENDIX 5: QUALITATIVE COSTS AND BENEFITS

ISSUE	Qualitative Cost	Qualitative Benefit
1. Promulgating the Rule	• Public awareness of the need to have a new HO	
2. Implementing the Rule	• Time necessary for analysis the new rule and adjust to new standards	
3. Post-Implementation Impact		
a. Impact on youth/families	• Possible decreased job opportunities for youth	• Decrease in pain and suffering to youth workers
b. Impact on businesses (effectiveness, efficiency, and other impacts)	• Potential loss of youth labor pool	
c. Other impacts	• Fairness and equity	

APPENDIX 6: ANALYSIS OF STATE CHILD LABOR LAWS

Purpose

An analysis of current state laws regarding child labor was undertaken with the goal of determining whether states currently have more stringent laws than the proposed new HO with regard to minors operating motor vehicles within the agricultural industry.

Overall Findings

There are very few states that do not have child labor HOs. Generally, many of the states' agriculture-related child labor laws mirror federal regulations. Seventeen states either have no specific agriculture HOs or exempt agriculture employment from general child labor laws.

State[1]	Prohibited hazardous occupations (HOs) in agriculture to age:
Federal: Fair Labor Standards Act (FSLA) applies to migrants and local residents regardless of farm size or number of man-days of farm labor used on that farm.	(Applicable to minors under age 16.) Numerous occupations have been declared hazardous in 11 categories of employment including, among others, operating tractors of over 20 PTO horsepower; operating or assisting to operate corn pickers, grain combines, hay movers, potato diggers, trenchers or earthmoving equipment, or power-driven circular, hand or chain saws; working in a yard, pen or stall occupied by a stud animal or a sow with suckling pigs; working inside a silo or manure pit; handling or applying certain agricultural chemicals; and handling or using a blasting agent such as dynamite or black powder.
Alaska	No specific agriculture HOs. Those of general application under 18 are considered as covering agriculture where applicable (e.g. working with power-driven machinery).
Arizona	Applicable to minors under age 16. (similar to Federal HOs)
Arkansas	No specific agriculture HOs. Those of general application for under 16 are considered as covering agriculture where applicable (e.g. working with unguarded belts and adjustable belts)
California	(Applicable to minors under age 16.); adopts Federal HOs 12 work prohibited in any agriculture danger zone (areas in or about moving equipment, unprotected chemicals, and unprotected water hazard).
Colorado	No specific agric. HOs. Those of general application for under 18 are considered as covering agric. where applicable (e.g. work 20 feet above ground, operation of power-driven machinery).
Connecticut (separate agriculture	No specific agric. HOs. Those of general application for under 18 are considered as covering agric. where applicable (e.g. work on ladders,

State[1]	Prohibited hazardous occupations (HOs) in agriculture to age:
child labor law)	operation of power-driven machinery).
Delaware (farm work exempt unless performed in hazardous occupations)	Applicable to minors under age 16; (adopts, by reference, the Federal HOs). Law exempts those working with adult supervision.
Florida	Applicable to minors under age 18; operating or assisting to operate a tractor over 20 PTO horsepower, any trencher or earthmoving equipment, forklift, or any harvesting, planting, or plowing machinery, or any moving machinery. 16, operation of power-driven machinery.
Hawaii	Applicable to minors under age 16; (several), age 15 pineapple harvesters prohibited from being on the harvesting machine or the truck attached to it, age 12 prohibited from using any harvesting equipment while engaged in coffee harvesting except holding hooks which are free of any attachments or accessories and baskets or containers used to carry coffee berries. They are not allowed to carry loads in excess of 15 pounds.
Idaho	---
Illinois (minimum age only)	---
Indiana (Exempt except for minimum age or when school is in session)	---
Iowa (law exempts part-time work in agriculture (less than 20 hours a week when school is not in session and less than 14 hours a week while school is in session) It covers all migratory labor)	No specific agric. HOs. Those of general application for under 18 and under 16 are considered as covering migrant labor where applicable (e.g. power-driven hoisting apparatus - under 18, power-driven machinery - under 16).
Maine (exempt if not in direct contact with hazardous machinery or substances)	- (hazardous machinery or substances mentioned in exemption refers to occupations prohibited under Federal law)

State[1]	Prohibited hazardous occupations (HOs) in agriculture to age:
Massachusetts	Applicable to minors under age 16; operation of saw or cutter on a farm except family farm; stripping, sorting, manufacturing or packing tobacco.
Michigan (exempt except for operations involving detasseling, roguing, hoeing, or similar in production of seed)	No specific agriculture HOs. Those of general application under 18 are considered as covering agriculture where applicable (e.g. working with power-driven machinery).
Minnesota	Age 18 (a few); age 16 (several including, by reference, the Federal HOs)
Missouri	No specific agriculture HOs. Those of general application under 16 are considered as covering agriculture where applicable (e.g. working with power-driven machinery, ladders, toxic or hazardous chemicals).
Nevada (exempt except for minimum age when school in session)	---
New Hampshire	Applicable to minors under age 16; (adopts, by reference, the Federal HOs)
New Jersey	Age 18 (a few); age 16 (a few)
New Mexico	No specific agriculture HOs. Those of general application under 16 are considered as covering agriculture where applicable (e.g. belted, moving, machinery).
New York	Applicable to minors under age 16; adopts Federal HOs
North Dakota	-(Law specifies that minors under 16 are not to be prohibited from doing ordinary farm work or from operating farm machinery.)
Ohio	Applicable to minors under age 16 (same as Federal HOs)
Oregon	Applicable to minors under age 18 (16 with Certificate of Training);operating power-driven farm machinery of any kind; riding in or on power-driven farm machinery for the purpose of transporting, sorting, delivering, or otherwise processing farm products. State adopts Federal HOs.
Pennsylvania (exempt from child labor law. Separate law covers seasonal	---

State[1]	Prohibited hazardous occupations (HOs) in agriculture to age:
farm workers).	
South Carolina	Applicable to minors under age 16 (same as Federal HOs)
South Dakota	---
Utah	With parental consent, no age limit for agriculture work, including operation of power-driven farm machinery. Otherwise, HOs of general application for under 18 are considered as covering agriculture where applicable (e.g. power-driven hoisting apparatus).
Vermont	No specific agriculture HOs. Those of general application under 16 are considered as covering agriculture where applicable (e.g. operating a machine having an unguarded belt, adjusting belt- driven equipment, and cleaning machinery).
Virginia	Age 18 (several) age 16 (a few) (Generally the same as Federal HOs) Children 16 may operate, assist in operating, or otherwise perform work involving a truck, excluding a tractor trailer, or farm vehicle. Children 14 may perform work as a helper on a truck or commercial vehicle, while engaged in such work exclusively on a farm.
Washington	Age 18 (some) age 16 (same as Federal HOs)
Wisconsin	Applicable to minors under age 16 (same as Federal HOs)

--- No provision

[1] Agricultural employment is exempted from or is not listed among the covered sectors in the child labor laws of 17 states: Alabama, Delaware (non-hazardous employment), Georgia, Kansas, Kentucky, Louisiana, Maryland (non-hazardous employment), Mississippi, Montana, Nebraska (covers only work in detasseling and beet fields), North Carolina, Oklahoma, Rhode Island, Tennessee, Texas, West Virginia (non-hazardous employment) and Wyoming. Laws generally exclude minors employed by parents on family farms.

[2] California. Until January 1, 2005, 16- and 17-year olds in Lake County who are employed in agricultural packing plants may work more than 48 hours, but no more than 60, in any 1 week with written approval of the Lake County Board of Education.

Table found at: http://www.dol.gov/esa/programs/whd/state/agriemp2.htm#prohibited

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